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LITERATURE AND LIBRARY SERVICE REQUIREMENTS: AN ANALYSIS OF CURRENT AND POTENTIAL REQUIREMENTS WITHIN THE U.S. ENVIRONMENTAL PROTECTION AGENCY

DENVER RESEARCH INSTITUTE

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LITERATURE AND LIBRARY SERVICE REQUIREMENTS

An Analysis of Current and Potential Requirements within the U.S. Environmental Protection Agency

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SECTION I. INTRODUCTION

This report is concerned with the literature and library service requirements of the United States Environmental Protection Agency (EPA). It presents the findings and recommendations produced during a nationwide survey of EPA employees. Engineers, physical and biological scientists, administrators and managers, lawyers, and social scientists are represented among the randomly selected sample of employees actually contacted. All levels of civil service involved in Agency activities are included; so, too, are all regional offices, research centers and headquarters, along with a small number of the Agency's remotely located facilities.

Reasons for this Survey

Two recent trends in the area of environmental information stimulated EPA management to undertake this survey. First, there has been the obvious growth in literature related to environmental protection. Certain economists are forecasting a fourfold-to-sixfold increase worldwide in scientific and technical literature between now and 1985.[1] This means that something on the order of 12 million unduplicated scientific and technical reports, articles, books, and so on will be produced in 1985, as compared to some 2 million in 1973 and one-half million 15 years ago. Much of that literature, of course, will relate to matters of environmental concern. These estimates do not include growth in

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[1]Anderla, J. Georges. The Growth of Scientific and Technical Information: A Challenge. Washington, D.C.: National Science Foundation Office of Science Information Service, 1974.

legal, economic, managerial, and other categories of environmental literature. Controlling the acquisition, storage, and distribution of this quickly growing literature supply requires careful long-range planning.

Second, there has been a sharp increase in the cost of acquiring, distributing and using environmental literature. While anyone interested in the subject knows it is costing more, actual costs have not been calculated for the Agency. Measuring current costs of Agency literature use should provide baseline data that will be helpful in budgeting for future literature use. Over time, such measures may indicate the relative effectiveness of attempts to reduce inefficiencies in employee use of literature and the library system.

Research Objectives

This project was aimed at determining the Agency's current literature and library service needs; estimating the cost of meeting those needs; examining the relative effectiveness of existing literature and library services in meeting those needs; identifying factors that may be impeding adequate literature and library use; and formulating alternative ways of meeting EPA's literature and library service requirements.

These five research objectives were addressed to produce input for management evaluation of the current mixture of Agency library services. The resulting findings hopefully will provide a partial basis for exploring system design options that might provide employees with increasingly responsive, and more cost-effective, literature and library services.

Some Key Definitions

Literature. Throughout this report, the word "literature" refers to all documents used by Agency employees. Primarily, but not exclusively, documents include research reports, legislative and regulatory statements, executive orders and memoranda, books, reference works, research journals, trade publications, newsletters, news magazines and newspapers. Documents may be in hardcopy, microform or electronic form. While distributed most often in "final draft" formats, documents sometimes are circulated as preliminary drafts. Documents are considered "work-related" if so specified by the individual employee.

Literature use. The phrase "literature use" refers operationally to an employee's statement that he or she spent at least 15 minutes reviewing a document. This review may have been cursory or careful. Employee time spent searching for a needed document was excluded from the measurement of literature use on the assumption that use ordinarily begins after a document has been obtained.

Cost. The "cost" of employee literature use is defined narrowly as the monetary value, in terms of dollar per hour, of the time spent using literature. A conservative figure of $10 per hour per employee was used; this figure is an overall hourly average for all Agency employees and includes basic salary or wage, plus fringe, vacation and sick leave accrual.

EPA Library System. The EPA Library System consists of 28 libraries Agency-wide, with a library being defined as any unit having a collection, a library staff member, and library services available to users. In addition to the Headquarters Library, there are libraries located in all

Regional Offices (except for Region II), the National Environmental Research Centers (NERC's), certain satellite laboratories, and specialized information centers in the Program Offices.[2]

Study Design

Population surveyed. The Agency employed approximately 9,100 persons at the time of the survey in August, September and October 1974. Roughly 3,000 EPA employees classified in secretarial and clerical positions below the government service eight (GS-8) level were excluded from the population surveyed; the assumption was that their work-related literature and library service requirements typically are not significant aspects of their work activity. All other persons holding positions below GS-8 (e.g., GS-1 laboratory technicians, GS-5 law clerks), however, were included in the population surveyed on the assumption that they read work-related literature at least occasionally. The total size of the employee population surveyed, therefore, was 6,168. *This number was used as the basis for calculating the population estimates presented in this report.*

Data collection techniques. Four techniques were used to obtain answers to the research questions. First, personal interviews were conducted with EPA administrative personnel, including head librarians, responsible for managing Agency library operations in each of the 19 locations visited (Appendix A). The prime purpose of these interviews

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[2]U.S. Environmental Protection Agency. User's Guide to the Environmental Protection Agency Library System. EPA-LIB-74-05. Washington, D.C.: 1974.

was to obtain management insights, evaluations, and recommendations related to the objectives of the project.

Second, informal small group conversations were held with employees in numerous Agency locations concerning their uses of literature and Agency library services.

Third, 22 formal meetings were held with small groups in the 19 locations visited. A total of 311 randomly selected employees, proportionately representing five different occupational segments and three organizational affiliation subgroups, participated in the formal meetings. During those meetings, participants: (1) were introduced to the purposes and procedures of the project; (2) completed two written questionnaires concerned with demographic characteristics (Appendix B) and recent Agency library use (Appendix C); and (3) were instructed on the correct procedure for keeping daily records of their work-related and other literature and library use activities (Appendix D).

Finally, each of the 311 randomly selected employees kept daily reading records on two randomly assigned days per week--including weekends and holidays--during a four-week period in September and October 1974. In addition to reporting total amount of reading time, participants recorded time spent reading at work, types of literature read, time spent using an Agency library, and the like (Appendix E). Time spent was recorded to the nearest quarter-hour.

Approximately 32 percent of the 6,168 employees surveyed are engineers, 30 percent are administrators and managers, 25 percent are physical-biological-medical scientists, 7 percent are lawyers, and 5 percent are social scientists. Thirty-two percent hold masters degrees,

10 percent Ph.D. degrees, and 51 percent other academic degrees. Thirty-two percent of the Agency's employees have had fewer than 5 years work experience, 27 percent have from 5 to 10 years experience, and the remaining 41 percent have been working 10 years or longer. Sixty-eight percent are in the junior government service grades (i.e., below GS-13), and 32 percent are in the senior grades.

All principal relations between factors of interest in this project were cross-tabulated against these factors. When they make an important difference in a relationship, it is mentioned in the report.

Preliminary Comparative Analysis

This survey represents the first market-type analysis of employee literature and library requirements. As such, somewhat crude indices were used to develop an integrated picture of employees' needs for and uses of literature and libraries. Those indices helped produce a yardstick-like, rather than a micrometer-like, set of measures of (1) what appears to be strong within the present system, and (2) what might be done to make the Agency's future response to employee literature and library requirements more appropriate.

Organization of this Report

The remainder of this report is arranged according to a plan designed to give EPA planning and management personnel the fullest possible answers, within the constraints of the data collected, to three basic questions: (1) How much time and money do employees spend using literature and library services (Section II)? (2) How well are current literature and library policies and practices supporting employee

literature requirements (Section III)? (3) How might employees' literature and library use be made more effective (Section IV)?

SECTION II. EMPLOYEES' CURRENT LITERATURE AND LIBRARY USE

As a partial basis for determining how best to meet future Agency literature and library requirements, it is desirable to have "benchmark" data against which future measures of effectiveness in meeting requirements can be compared. This section presents a brief review of selected benchmark data generated in the survey. First, some estimates of the time and cost of employee literature use are presented; then, employee use and nonuse of various information and literature resources are probed; finally, a profile is drawn of the Agency's most frequent literature and library users--a subgroup of some 2,000 employees who appear to benefit most from current literature and library policies and practices.

Time and Cost Estimates of Literature Use

Time spent. This survey revealed that the average employee spends approximately 75 (actually an estimated mean of 74.76) minutes per day in work-related reading. This estimate includes not only time spent reading at work (where 90 percent of work-related reading is done), but also work-related reading away from work on holidays, at night and on weekends. On any given day during the six-week survey period, therefore, the 6,168 employees surveyed spent an estimated 7,700 hours in work-related reading.

Assuming that any particular day in the survey period was comparable to any other randomly selected day in the year, except for days spent on annual or sick leave, Agency employees spent an estimated 2.5 million hours in work-related reading during 1974.

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Cost estimate. By using a conservative estimate of $10 per hour to cover an employee's base salary or wage plus fringe, vacation and sick leave, it is estimated that the 1974 cost to EPA for the work-related reading done at work by employees totaled approximately $23 million. This estimate is considered quite conservative since it does not include the costs of purchasing, cataloging, storing, searching for, and retrieving the literature that employees used; it also excludes the 10 percent of work-related reading done away from work.

Cost per item read. The number and variety of books, reports, memoranda, journal articles, and other documents read by Agency employees are substantial. Based on the survey data, employees read an estimated average (mean) of 19.65 items per day during the six-week period analyzed. The vast majority, approximately 80 percent, of those items were "work-related" by employees' definition. On any given day during the survey, therefore, the 6,168 employees read an estimated 97,000 items of work-related literature.

Assuming, again, that any given survey day was similar to any other day that might have been selected in 1974, except for vacation and sick leave, employees read an estimated 33 million items of work-related literature during the year. Considering the overall estimate of the $23 million value of the time employees spent on work-related reading, the estimated per-item cost of employees' literature use was .70 cents. This estimate also is considered quite conservative because it excludes the costs of purchasing, cataloging, storing, searching for, and retrieving the literature used; it also does not include the 10 percent of work-related literature read away from work.

Use of Information Resources

Agency library use and nonuse. The total 1974 Agency investment in the EPA Library System was approximately $1.25 million. An equivalent of 85 full-time librarians operated the 28 libraries in this system. They provided literature services to 80 percent of the 6,168 employees surveyed.

The Agency Library System was the most frequently used of all the information resources examined. As shown in Table 2-1, 37 out of every 100 employees reported using an Agency library at least once per month during the 12-month period preceeding the survey.

TABLE 2-1. EMPLOYEES' REPORTED AGENCY LIBRARY USE "DURING PAST 12 MONTHS"

FREQUENCY OF USE	PERCENT	POPULATION ESTIMATE
None	20%	1,252
Once or twice	11	697
Three to ten times	31	1,918
Over ten times	37	2,301
TOTALS	99%*	6,168

*Rounding error.

Among the nonusers of the Agency Library System, an unexpectedly high proportion are administrators, managers, and engineers (given their numbers in the population). Their nonuse can be accounted for, to some degree, by their "action-oriented" job requirements and the traditionally heavy dependence in their fields on interpersonal, rather than on literature-related, means for acquiring needed information.

Use of other information resources. A substantial relationship was found between employees' use of an Agency library and their use of other information resources. As shown in Table 2-2, the heaviest users (i.e., 11 times or more per year) of the Agency Library System tended to be the most frequent participants in meetings, as well as the heaviest users of other public libraries, college libraries, journals, other federal agencies, and for-profit information firms. Differences between intermediate and infrequent Agency library users also tend to be substantial. Nonusers of the Agency Library System also tend to be nonusers of other information resources.

TABLE 2-2. FREQUENCY OF AGENCY LIBRARY USE VS. USE OF NONAGENCY INFORMATION RESOURCES IN PAST 12 MONTHS

NONAGENCY INFORMATION RESOURCES	AGENCY LIBRARY USE FREQUENCY			DIFFERENCES (HIGHEST-LOWEST)
	≥ 11x (N=116)	3-10 (N=97)	< 3x (N=98)	
Meetings	66%	58%	49%	17%
Public Libraries	61	54	41	20
College Libraries	60	34	31	29
Journals	50	36	21	29
Other Agencies	49	44	25	24
Vendors	45	52	35	17
Trade Publications	38	36	29	9
Professors	32	13	20	19
For-Profit Information Firms	16	8	6	10

Sharp differences were found between employees' use of information resources when compared on the basis of organizational affiliation. The most substantial of these differences are shown in Table 2-3.

TABLE 2-3. ORGANIZATIONAL UNIT BY USE OF SELECTED INFORMATION RESOURCES

INFORMATION RESOURCE	ORGANIZATIONAL UNIT			DIFFERENCES (HIGHEST-LOWEST)
	REG. OFFICE (N=153)	HQS (N=53)	NERC'S (N=103)	
College Libraries	38%	28%	58%	30%
Public Libraries	59	64	38	26
Research Institutes	16	30	15	15
College Professors	18	17	32	15
Other Agencies	38	51	38	13
Agency Library	84	81	73	11

The reasons for such sharp differences are explainable to some extent by the differing roles--enforcement, policy, research--played by the three types of organizational units. The scientific and technical research orientation of NERC's, for example, probably accounts for their comparatively greater reliance on college libraries and lesser dependence on other information sources. Headquarters, the policy-regulatory-legislative center of the agency, "touches base" more exhaustively than NERC's and regional offices with other agencies to meet requirements for integration and coordination of effort; research institutes provide vital support to Headquarters in these areas. Finally, regional offices--the enforcement branches of the Agency--must apply theory and regulation in actual field situations; not surprisingly, they tend to rely more heavily than Headquarters, but less heavily than NERC's, on the full range of information resources analyzed.

Subject matter of interest. What were employees reading about in their work-related reading? The data in Table 2-4 underline the fact that a strong relationship exists between organizational unit and subject

matter of interest. These differences, again, reflect the different responsibilities of the three types of organizational units.

TABLE 2-4. ORGANIZATIONAL UNITS' INTEREST IN VARIOUS KINDS OF SUBJECT MATTER

SUBJECT MATTER	TOTAL (N=309)*	ORGANIZATIONAL UNIT REG. OFFICE (N=153)	HQS (N=53)	NERC (N=103)
Engineering	55%	61%	40%	54%
Scientific	48	41	30	68
Legal	37	42	60	18
Management	21	20	30	18
Socioeconomic	15	13	30	12

*Percentages do not add up to 100 because multiple responses were permitted.

A Profile of Employees Benefitting Most Under Current Literature and Library Policies and Practices

Approximately one-third of the Agency's 6,168 employees read work-related literature an average of 1.25 hours or more per day. These 2,000 "heavy" readers tend to be scientists (physical and social) and lawyers, rather than engineers or managers.

In disproportionately large numbers, they tend to be heavier users of Agency, public, and college libraries; they participate in many more meetings than do the "light" readers; they have larger personal collections of books, journals, newsletters, magazines, and other literature; and they depend more on consultants, equipment vendors, and commercial information firms for access to needed information.

In a word, the heavy users are literature and library rich. The preponderance of heavy readers are described variously by associates as comparative "job successes" and "opinion leaders."

A few "worst cases" of chronic readers who do little else but read at work were talked about, but never specifically identified, during the survey. Far more "light" readers than "heavy" readers were identified as being "in a rut" professionally.

Resources did not permit additional analysis of the literature and library rich versus the remainder of Agency employees. It is probably significant, from a system management perspective, to note that current literature and library policies routinely fulfill the information requirements of just one-third of the employee force; the remaining two-thirds do not, possibly need not, avail themselves of existing information resources. Some possible reasons for this are explored in the next section.

SECTION III. A PRELIMINARY EVALUATION OF AGENCY LITERATURE AND LIBRARY SERVICES

To provide some baseline data related to the adequacy of the Agency's current literature and library policies and practices, employees were asked to assist in an evaluation of attempts to meet their information requirements. One obvious danger in asking for such assistance is to suggest to employees, as one interviewee phrased it, "that something must be wrong, or else why would you be asking?"

Since the primary reasons for conducting the evaluation were to obtain feedback from users that might be useful in strengthening an already viable system and to help prevent, not just correct, major difficulties, every effort was made to keep employees' evaluations practical, personal and fairly straightforward (see question 1B, 7B and 10, Appendix C).

The purpose in this section is to sum up the results of the preliminary evaluation activity in such a way that those responsible for planning and implementing future literature and library policies and services will be guided to some degree by employee views of what is needed. After considering employees' concerns about their ability to acquire needed information, the section then treats two evaluation issues: difficulties associated with use of the Agency Library System, and employee assessments of how well the Library System is doing in helping meet their literature needs.

Information-Accessing Problems Confronting Employees

Employees expressed major concern with five aspects of their ability to access needed information: (1) uncertainty about what

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information is available (47 percent expressed this concern); (2) uncertainty about where information can be found (30 percent); (3) too much information to digest (26 percent); (4) too much trouble to get materials (22 percent); and (5) the unavailability of raw data (21 percent).

Administrators, managers, and engineers appear to be much more concerned than scientists or lawyers with the problem of knowing what information is available.

Perhaps this finding reflects the more ambiguous and seemingly less well organized conceptual and methodological aspects of management and engineering vis-a-vis these aspects of science and law. The administrative and engineering professionals interviewed sometimes noted serious difficulties in routinizing their work activities; unpredictable turns of events--someone resigning, budgetary cutbacks, changes in products and prices--constantly remind managers and engineers that much potentially useful knowledge exists over which they have no command. To a considerable degree, that knowledge exists within people rather that in literature; this is one reason why these professionals don't turn as readily or as often to librarians for assistance in obtaining needed information.

The problem of knowing what information is available may be somewhat less serious to scientists and lawyers simply because (a) the state-of-the-art in their fields appears to change less drastically less often; (b) procedures for defining and treating the "unknown" are more standardized, and (c) much more of the knowledge they must command is available in the literature.

It is worth noting that younger employees express much more concern than more experienced employees with the problem of knowing what information is available. While not surprising (i.e., neophytes in most organizations have difficulty with this problem), this finding nonetheless should be kept in mind during future Agency initiatives to apprise employees of what information is available. At present the orientation checklist which the Personnel Office provides new employees does not refer to Agency-provided information services (e.g., the Agency Library System); it may be that this seemingly trivial omission has some bearing on the younger employees' general concern with information availability.

Factors Related to Agency Library Nonuse

Employees who did not use an Agency library "during the past 12 months" gave five principal reasons:

- Ability to satisfy literature requirements without using an Agency library (54 percent of the estimated 1,200 nonusers);
- Rarely need library services--Agency or otherwise (44 percent);
- Lack of familiarity with what library services are available (35 percent);
- Too far to go to get library materials (35 percent);
- Dissatisfied with the results of earlier attempts to get help from an Agency library (21 percent).

Managers and engineers were far more likely than scientists and lawyers to claim they can satisfy their literature needs without using an Agency library. Engineers, for example, rely heavily on manufacturer's catalogues and government specifications manuals, both of which they tend to stockpile near their work locations. Similarly, managers personally

acquire many books, newsletters and magazines. Their collections tend to be rather small (e.g., fewer than 50 books, only current issues of magazines); often they "read and toss" newsletters, newspapers and magazines because these materials become dated quickly.

Lawyers claim they rarely need agency library services. Their prime reason is that legal departments usually provide their staffs with special collections of their own.

Lack of familiarity with what library services the Agency provides appears to be a major factor associated with nonuse, as shown in Table 3-1.

TABLE 3-1. RELATIONSHIP BETWEEN USE OF AND FAMILIARITY WITH AGENCY LIBRARY

	USE IN PAST 12 MONTHS				
FAMILIARITY	Never (N=63)	1-2x (N=35)	3-6x (N=67)	7-10x (N=30)	10x (N=116)
Not too	70%	54%	33%	20%	15%
Fairly	30	44	67	80	85
TOTALS	100%	100%	100%	100%	100%

The type of library service has a definite relationship to nonuse. Least frequently used (i.e., fewer than three times per employee in 1974) of the Agency library services were motion picture lending, referral services and automated literature services. In sharp contrast, the following Agency library services were used an average of six or more times by employees in 1974: lending government documents, magazine lending/purchasing, book lending/purchasing, and photocopying materials. Some of the infrequently used services--such as the automated literature search services--are fairly expensive when compared to other more frequently used

services. This raises some serious questions about the ways they are promoted, and whether they can be justified on a cost-effectiveness basis.

It is obvious that a major blockage to adequate library use is the absence of a locally available Agency library. While it may not be possible to justify such an investment for remotely located, very small employee groups, it is difficult to see how larger employee groups can meet literature requirements in a cost-effective manner without a local Agency library. When EPA came into existence, only 4 regional offices had libraries; at the time of this survey only Region II Headquarters in New York City did not have a library; now all 10 regional offices have libraries.

Employee Evaluations of Agency Library Services

Four measures of employee evaluations of Agency library services were taken: (1) user and nonuser overall ratings of locally available Agency libraries; (2) users' judgements about how often "in the past 12 months" the Agency Library System has satisfied their information needs; (3) telephone users' ratings of library services provided; and (4) users' overall ratings of the Library Systems Branch.

The measures, although relatively crude, point up the fact that employees feel the Library Systems Branch is doing a reasonably good job of meeting their literature requirements.

Users and nonusers alike give their locally available Agency library mostly fair-to-excellent ratings. Scientists and managers appear to be particularly pleased with local Agency libraries, whereas lawyers are the

least satisfied. Employees with more years of work experience tend to give the local Agency library higher ratings, as do heavy users.

Among users, scientists are more likely than other occupational groups to say the Agency library satisfies their information needs "most of the time." So, too, are employees with more work experience and the heavier users of library services.

Persons who mostly use the phone to obtain library services tend to give the Agency library "fair," rather than "excellent," response ratings. Managers appear to be less satisfied with library telephone response than either scientists or engineers; Headquarters personnel are much less satisfied than employees in regional offices or NERC's with this aspect of Agency library services; also expressing dissatisfaction are younger employees and infrequent library users. The lawyers surveyed indicated they almost never use the telephone to obtain library services.

Conclusion

The general picture of Agency library services that emerges from this "employee evaluation" is that the Library Systems Branch is doing a reasonably good job of supporting literature requirements. Some obvious and fairly straightforward steps that might be taken to upgrade the effectiveness of the Branch in serving those requirements are presented in the next section.

SECTION IV. SOME SUGGESTIONS FOR IMPROVING EMPLOYEE LITERATURE AND LIBRARY USE

This survey revealed a number of factors that appear to impede employees' access to and use of literature and library services provided by the Agency. After summarizing a few of the most important factors, this section proposes a series of steps that might be taken to ameliorate the negative factors and to make the Library System a more widely known and better utilized Agency information resource.

A Few Factors Limiting Literature and Library Use

Perhaps the single most significant factor to be confronted is a widespread lack of awareness among most employees concerning the full range of library services currently available. This may be due in part to a passive, rather than an active, promotional policy. Whatever the reason, the implication of ignorance is quite simple: nonuse or accidental and infrequent, rather than systematic, use of available literature and library services.

A factor that appears to be impeding adequate literature use is the practice of stockpiling fairly large collections of literature by individual employees. Unindexed in most cases, the problem of finding literature in many such personal collections is often serious: much time is wasted searching, often futilely, for literature one knows in "there."

The problem of defining who is to benefit from Agency-provided library services may operate as a factor limiting adequate library use. Under its charter, the Library Systems Branch is to provide all

employees with literature support services. Translated to practice, this policy may be producing or reinforcing a "traditional" and passive approach to the provision of library services. Among other things, this approach tends to treat all clients--potential and actual--as a homogeneous group, rather than as various "segments" or "subgroups" having very different information habits and requirements. Another aspect of the traditional library approach is a tendency for library staffs to spread themselves too thin by providing clients with too many services; closely paralleling this tendency is the habit of maintaining services past a point of cost-effectiveness. The point here is not that the Agency's Library System is bound by strangulating library traditions; on the contrary, this system appears to be one of the most progressive federal library systems currently operating. The point, rather, is that certain possibilities exist for strengthening the system by clarifying who is to be served in nontraditional marketing terms. Such a clarification should lead quite naturally to refinements in system design and operations that could benefit greatly current and potential users.

Seven Recommendations

1. Develop a more effective approach for keeping employees current on new materials that may be of interest to them. For example, the Agency Library System could publish a newsletter containing information on recently acquired materials. The survey data suggest that only one employee group, lawyers, would not be receptive to this idea.

2. Establish a program to assist people in the organization and control of their personal collections of books, reports, newsletters,

journals, and other literature. While 87 percent have such collections, only 13 percent maintain indexes to those collections. Nine-tenths of the employees interviewed said they waste a "considerable amount of time in an average week" searching for materials they know they have, but cannot retrieve cost effectively.

3. Develop more selective appeals for promoting utilization of most library services that are offered. Instead of advertising the availability of automated literature search services on an Agency-wide basis, for example, it might be much more cost-effective to concentrate promotional activity on the highly specialized employee subgroups that are most likely to benefit from use.

4. Some form of familiarization and training activity should be developed to provide current nonusers and infrequent Agency library users with the services that might be of greater interest to them. One obvious starting point is the orientation checklist the Personnel Office provides new employees; that list, which does not even refer to the Agency Library System, could be revised to include orientation material.

5. Explore the possibility of centralizing the acquisition of books, reports, and other literature through an Agency library where such centralization does not now occur. Cost savings available through the centralized purchasing of books, for example, could bring about substantial gains in acquisition efficiency.

6. Review infrequently used Agency library services, such as distributing motion pictures and providing automated literature search services, to determine: (a) their cost-effectiveness, and (b) whether they should be continued under the aegis of the Agency Library System.

Such a review might be constructive in suggesting possibly more effective ways of getting potentially interested employees involved in using such services.

7. Consider the possibility of examining the degree to which literature use correlates with job performance. This survey did not examine this question directly; however, some indirect evidence was gathered that indicates a tentative relationship. First, heavy readers tend to have higher GS levels. Second, it seems highly probable that heavy literature users are much more efficient than light literature users in searching for needed information. Results of the proposed examination might have very significant implications for designing user orientation and training programs.

APPENDIX A

AGENCY SITES VISITED

LOCATION		DATES (1974)
Regional Offices		
Region I	Boston	October 4
Region II	New York	September 30
Region III	Philadelphia	October 1
Region IV	Atlanta	September 30
Region V	Chicago	October 23
Region VI	Dallas	September 27
Region VII	Kansas City	September 23
Region VIII	Denver	September 23
Region IX	San Francisco	October 11
Region X	Seattle	October 8
National Environmental Research Centers		
Cincinnati, Ohio		August 5
Corvallis, Oregon		October 10
Las Vegas, Nevada		October 15
Research Triangle Park, North Carolina		October 2
Headquarters		October 2-3
Other Locations		
Ada, Oklahoma		September 25
Ann Arbor, Michigan		October 22
Athens, Georgia		October 1

APPENDIX B

PERSONAL PROFILE

PERSONAL PROFILE

Date_____ Profile No._____

1. Highest degree — None ☐ Bachelor ☐ Master's ☐ Ph.D. ☐ Other ☐

2. Years of experience (after degree) — <5 ☐ 5-9 ☐ 10-19 ☐ 20-29 ☐ >30 ☐

3. Field of specialization (If "other", please specify) — Admin/Mgt. ☐ Legal ☐ Social/Behavioral Sc. ☐ Physical/Biol./Med. Sc. ☐ Engineering ☐ Other ☐ _____

4. Field of activity (denote approx. % of your working time) (If "other" is over 10%, please specify) — Research ☐ Enforcement ☐ Admin. and/or Supervision ☐ Other ☐ _____

5. Your present GS level_____

6. Do you wear prescription glasses for reading?
(If you use glasses only for distance, as in driving, check No)

No ☐ Normal ☐ Bifocal ☐ Trifocal ☐

Approximately when were your eyes examined last?_____

7. Have you ever taken a speed reading course? Yes ☐ No ☐

8. If you know, what is your reading rate in words per minute?_____

9. Approximately how many magazines, newsletters, and newspapers directly related to your present job do you receive each month, both free and paid, at work and at home combined?

	None	<3	3-5	>6
Journals	☐	☐	☐	☐
Newsletters	☐	☐	☐	☐
Newspapers	☐	☐	☐	☐

10. A. Do you maintain a personal collection of books, technical reports, periodicals, or other publications?

Yes ☐ No ☐

B. IF YES, roughly how large is your collection?

Books	☐	Volumes	Approximate Number
Technical Reports	☐	Volumes	
Periodicals	☐	Issues	
Other Materials	☐	Copies	

11. A. Do you maintain an index to technical reports or publications?

Yes ☐ No ☐

B. IF YES, approximately how extensive are your files or indices?

_____

_____

C. IF YES, roughly how much time (to the nearest hour) did you spend using those files during the past week?

Adding new references _____hours.
Searching for references _____hours.

12. Your organization affiliation (check only one):

☐ A Regional Office
☐ A National Environmental Research Center
☐ A National Field Investigation Center
☐ Headquarters

APPENDIX C

QUESTIONS CONCERNING AGENCY LIBRARY USE

QUESTIONS CONCERNING AGENCY LIBRARY USE

Date_____ Profile No._____

Please mark an "X" in the appropriate box(es) for each question. In case a question has no fixed responses, please write in a very brief answer.

1. A. Do you have access to any Agency-operated library in the place you do most of your work?

   ☐ Yes
   ☐ No

   B. IF YES, how would you rate the overall adequacy of this library in providing for your information needs?

   ☐ Poor
   ☐ Fair
   ☐ Excellent

2. In which of the following categories do most of your information needs fall? Check as many boxes as apply and specify which topics.

   ☐ In scientific fields; which ones?_____
   ☐ In engineering/technical fields; which?_____
   ☐ In management fields; which?_____
   ☐ In legal, legislative, regulatory fields; which?_____
   _____
   ☐ In demography, economics, social sciences; which?_____
   _____
   ☐ In other important fields; which?_____
   _____

3. What are the most serious information problems that you seem to be encountering at the present time? Check as many boxes as apply.

   ☐ Too far to go to get materials
   ☐ Too much trouble to get materials
   ☐ Unavailability of raw data
   ☐ Too much information to digest
   ☐ Uncertain about what information is available
   ☐ Uncertain about where information can be found
   ☐ Information obtained often is out of date
   ☐ Other; which?_____

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4. What types of non-Agency ("outside") information sources have you used during the past 12 months? Check as many boxes as apply.

- ☐ Public library
- ☐ College/University library; which?_____
- ☐ Suppliers of equipment/materials
- ☐ Other federal agencies; which?_____
- ☐ College professors
- ☐ Fee-paid data and information services; which?_____
  _____
- ☐ Research journals; most important ones?_____
  _____
- ☐ Trade/business publications; most important ones?_____
  _____
- ☐ Conferences, meetings, seminars; approximately how many?_____
  _____
- ☐ Other <u>important</u> sources not mentioned; which?_____
  _____

5. Do you have access to the special equipment necessary for reading microforms? Which types?

Type		Yes	No	Uncertain
a.	Microfiche?	a. ☐	☐	☐
b.	Rollfilm?	b. ☐	☐	☐
c.	Cassette?	c. ☐	☐	☐
d.	Aperature card?	d. ☐	☐	☐

6. Would you say you are very familiar with the various services the Agency's Library Systems Branch provides, fairly familiar, or not at all familiar with those services?

- ☐ Not at all familiar
- ☐ Fairly familiar
- ☐ Very familiar

7. A. About how many times in the past 12 months have you made use of an Agency library to obtain information related to your work?

- ☐ None
- ☐ Once or twice
- ☐ 3 to 6 times
- ☐ 7 to 10 times
- ☐ Over 10 times

B. If you used an Agency library in the past 12 months, how often were your information needs satisfied by the library?

- ☐ Hardly ever
- ☐ Sometimes
- ☐ Most of the time
- ☐ Always

C. If you did not use an Agency library during the past 12 months, what is (are) the main reason(s) for your not using it?

- ☐ Too far to travel
- ☐ I just don't know what services the Agency's libraries provide
- ☐ I only have an occasional need for library services, Agency or otherwise
- ☐ I can satisfy my requirements without using an Agency library
- ☐ I've tried to use an Agency library before, but for one reason or another was not satisfied
- ☐ Some other reason; which?_____

_____

IF YOU HAVE NOT USED AN AGENCY LIBRARY DURING THE PAST 12 MONTHS, PLEASE SKIP TO QUESTION 12.

8. How frequently did you use each of the following Agency library services during the past 12 months?

Library Service	Frequency of Use			
	Never	3 times	3-5 times	6 times
a. Book lending/purchasing	a. ☐	☐	☐	☐
b. Magazine lending/purchasing	b. ☐	☐	☐	☐
c. Newspapers	c. ☐	☐	☐	☐
d. Directories and catalogs	d. ☐	☐	☐	☐
e. Microform materials/readers	e. ☐	☐	☐	☐
f. Photocopying materials	f. ☐	☐	☐	☐
g. Government documents	g. ☐	☐	☐	☐
h. Automated literature searches	h. ☐	☐	☐	☐
i. Referral services	i. ☐	☐	☐	☐
j. Motion pictures/video tapes	j. ☐	☐	☐	☐
k. Obtaining materials from other libraries	k. ☐	☐	☐	☐
l. Other; which?_____	l. ☐	☐	☐	☐

9. A. Check the manner in which you <u>most</u> <u>often</u> contact an Agency library for information. Check <u>one</u> box only.

☐ Telephone
☐ Personal visit
☐ Messenger (e.g., secretary)
☐ Correspondence

B. If most of your contacts with an Agency library are via <u>telephone</u>, how would you rate the service the library provides by telephone?

☐ Poor
☐ Fair
☐ Excellent

10. In your opinion is the Agency Library Systems Branch doing a poor, fair, or excellent job of serving you and your close working associates?

☐ Poor job
☐ Fair job
☐ Excellent job

What specifically is the <u>reason</u> for your rating?_____

_____

_____

_____

11. As far as speed in acquiring information from an Agency library is concerned, which one of the following statements most often applies to your particular use? Check only one box.

- ☐ I generally need the information in a few hours
- ☐ I usually can wait 24 hours for the information
- ☐ Two or three day service would be adequate in most cases
- ☐ One week service ordinarily would be acceptable

12. Think a moment about Agency personnel with whom you ordinarily work. How useful would you and they find it if the Agency were to introduce the following kinds of services?

Possible Service	We would find this: Very Useful	Fairly Useful	Not Useful
a. Establish more branch libraries	a. ☐	☐	☐
b. Initiate a program to announce all new books, journals, and other materials in key areas of interest	b. ☐	☐	☐
c. Provide services during the late evenings and weekends	c. ☐	☐	☐
d. Produce summaries of books and articles in selected subject areas	d. ☐	☐	☐
e. Another service; which?_____			

13. Here is a list of methods the Agency's Library Systems might use to better inform employees and consultants of its many services. Bearing in mind that the addition of services may necessitate increases in budget and staff, please check the one service that in your opinion would be most useful to you and your Agency associates.

- ☐ Provide a "reading room" near your work location
- ☐ Provide a brochure listing the information services and materials of the Library System
- ☐ Provide a monthly list of newly acquired books and materials--perhaps classifying them on a selected subject area basis
- ☐ Provide orientation and instruction in the use of the Library System
- ☐ Other; which?_____

14. Please indicate your willingness to participate in the following:

Your Participation	I would be: Very Willing	Fairly Willing	Unwilling
a. Giving the Library copies of documents you prepare for public distribution (e.g., reports, articles)	a. ☐	☐	☐
b. Giving the Library surplus books and other documents	b. ☐	☐	☐
c. Scanning/reading a newsletter published by the Library containing information on recently acquired materials	c. ☐	☐	☐
d. Serving as an expert source to be consulted by the Library in servicing the information of others	d. ☐	☐	☐
e. Transferring some (or all) of your own special collection over to the Library to be handled by it	e. ☐	☐	☐
f. Making other gifts to the Library; which?_____			

LITERATURE AND LIBRARY USE STUDY

Present Reading Habits

INSTRUCTIONS FOR ENTERING DATA ON DAILY RECORD SHEETS

This phase of the study will run from now until September 15. The study is of the "longitudinal" type in that we will be collecting data on your literature and library uses over the entire study period--both at work and at home. The only exception will involve your vacation if it occurs during this period.

It is very important that your data reflect accurately your reading habits. It also is important that everyone understand the questions so that data from each are strictly comparable. Before undertaking the entry of data, therefore, please study the "Daily Record Sheets" and the following instructions.

General Instructions

Daily Record Sheets will not be filled out by each participant every day during the study period, but only on the dates shown on the Sheets. Specifically, you will be called upon to record your reading activities on two days for each of the next four weeks. Saturdays and Sundays are included.

Entries should be made on all "reporting" days, even if you are absent from work due to sickness, travel, etc. The days chosen for each participant are random, but the number of measurements was determined by a statistical analysis based on the number of participants, the distribution of participants in different geographical locations, their occupational classifications, the number of kinds of data, and the correlations of data that will be made.

It is important, therefore, to enter data for the days indicated on the Daily Record Sheets and not the data for other days. We know, of course, that an individual's reading can vary a great deal from day to day. It may happen, in an extreme case, that one does no reading whatsoever on a particular "reporting"day. If that happens to you, show zero (0) for that day. Please don't give in to a temptation to enter the data from the pervious or the following day when you may have done a great deal of reading.

Please do not allow the fact that you are reporting on a particular day affect your reading habits for that day. There is no "right" or "wrong" amount of reading: simply record your reading activity as objectively as possible.

Each Daily Record Sheet carries a unique Profile Number that has been assigned to each participant. Only the Agency librarian located closest to you geographically will have access to the list of names and profile numbers of persons working in your area. The librarian will not open the

sealed envelopes you send in, but will merely check the profile numbers on the outside of the sealed envelopes to determine which participants have submitted forms. Someone has to do this so that difficulties, such as missing reports, can be looked after.

No data within the study will be associated with any individual. It will be impossible for anyone to examine the reading habits of any participant because the data will be compiled under still another set of profile numbers generated with a computer and which will be unknown to your librarian.

The information you enter on a Daily Record Sheet should cover a full day beginning with the first reading event in the morning, such as reading the morning newspaper, and ending with the last reading before retiring. Keypunching of data will be done directly from these sheets. Your entries, therefore, should be as neat and clear as possible. To this end, we want you to use a "Work Sheet" to accumulate data throught the day. These are supplied in the form of a pad that you can carry with you at all times. The data for each "recording" day should be summarized and entered on the Daily Record Sheets first thing the following morning and sent promptly to the librarian whose name is listed on the half-sized envelopes with which you have been provided.

The technique you use to enter data on the Work Sheet should be such that it's enough to "jog" your memory. Work Sheet entries need be intelligible only to you. For your convenience, a sample Work Sheet is shown below. By examining this sample, you will see that such sheets can be helpful in recording your data so that accurate entries can be made on the Daily Work Sheets.

WORK SHEET

Activity	Hours	No	Where
Newspaper articles + items	1/4	11	Home
Received new journals	1/2	20	Lib.
Correspondence, brochures	1/4	10	Office
Read journal articles	1/2	2	Office
Read technical report (microfiche)	1	5	Office
Novel (book) - skimmed	3/4	12	Home
Newspaper	1/2	15	Home

Detailed Instructions (Refer to blank "Daily Record Sheet")

Please record your reading time to the nearest 1/4 hour in all parts of the Daily Record Sheet. Make a "best guess" on time if you don't wear a watch. Finally, enter a "0" in any space which does not apply to your "reporting" day reading activities.

Part I-Type of Reading. All of your reading of all types is entered here. The four types of reading are defined as follows:

- o Work related: reading specific to your primary job responsibilities (e.g., enforcement, research, management) or closely related to them.
- o Field related: reading in your field of academic specialization (e.g., organic chemistry, law, public relations) that is not related directly to your present work or projects.
- o Other technical materials: reading in journals, books, reports, etc., not related to your job or academic specialization.
- o Non-Technical: reading in newspapers, news magazines, novels, etc.

Reading "at work" includes any reading you do in your office, an Agency-operated library, your laboratory, etc. Under reading "not at work" include reading done in non-Agency libraries (e.g., the Public Library), reading at home, etc.

Part II - Depth of Reading. An "item" is defined as a book, a journal article, a materials catalogue, a report, a newspaper, or a "separate" of published material of any kind.

"Read carefully" is in contrast to rapid "skimming". Careful reading involves a more concentrated analysis of an item. In the case of a book (Part II A), careful reading is defined as that which includes a substantial portion of the book (i.e., a chapter, section, or more). If you read the book over a period of days, record only the amount(s) of time spent reading on "recording" day(s).

Indicate whether the book is or is not from an Agency library. Include all books (e.g., novels, technical books, texts) except reference books (defined in next paragraph) or bound collections of materials that were not originally published in book form (e.g., bound journals, newspapers).

Reference books (Part II B), are defined as any books that you consult to find very specific bits of information. Examples are a dictionary to determine the spelling or meaning of a word; a bound book to determine the melting point, viscosity, etc., of a specific chemical; a data book to determine a film speed; and an indexing/abstracting publication (e.g., Chemical Abstracts, Engineering Index) you search or have searched to find references to potentially useful literature.

The entry concerning Journal articles (Part II C) will help establish the proportion of such articles that are skimmed in contrast to the number that are carefully read. When the skimming of a journal leads to the examination or reading of any article, it should be entered here. Each article examined constitutes one item.

Include under other publications (Part II D) such documents as government reports including EPA-published technical reports, materials catalogs, pamphlets, etc. Enter here all reading of documents not covered in II A, II B, II C, except for any internal Agency documents (defined in next paragraph). Reading the results of a computer-generated literature search in the form of a series of abstracts, titles, and the like, should be recorded here in Part II D. The answer to a search question constitutes one item regardless of the number of abstracts or references it includes.

Record under internal publications (Part II E), any EPA technical report, management report, status sheet, memorandum, letter, or other internal publication distributed solely within the Agency. Note that an EPA Technical Report intended for distribution outside the Agency should be considered "publicly available" and entered under Part II D.

Part III - Technical Reading with Microform. We are interested in your present use of microcopies and especially whether you use "microfiche". "All other microforms" include such microform media as roll films, microfilm aperture cards, etc.

Part IV - Where You Read at Work. This part is self-explanatory.

Part V - Agency Library Use. Under "browsing" include library-provided materials you examine--or have examined--in a casual or random manner. Examination of a new journal is included here if it was provided by an Agency library. If individual articles are read carefully, they also will be reported in Part II C.

Many employees write papers and reports in the Agency's library areas because of the proximity to reference material, etc., or merely because of the quiet atmosphere. If your spend time in this manner, account for it in Part V. Note-taking in an Agency library is not to be considered as writing, but rather as part of browsing or a searching operation.

The time you spend in a writing task generally involves reading documents, notebooks, notes, etc., that you have assembled for data and background. The time devoted to reading that you definitely can associate with a writing task in an Agency library should be included here as well as under Parts I and II.

Concluding Thought

These instructions sound rather complicated at first. We hope, however, they're not too difficult to follow. During the pilot study phase of this project, we found a number of ways to simplify the instructions. Perhaps the easiest way to see how to fill out the Daily Record Sheet is to look over the sample "Daily Record Sheet" (attached) based on the "Work Sheet" shown on page 2.

Thanks for your cooperation!!

DAILY RECORD SHEET

Date x/x/xx

Profile Number XYZ

NOTE: Enter "0" in any space that does not apply

I. TYPE AND LOCATION OF READING

TYPE	LOCATION "At Work"	LOCATION "Not at Work"	TOTAL HOURS
A. Work-related	1.75	0.00	1.75
B. Field-related	0.50	0.00	0.50
C. Other-technical	0.00	0.00	0.00
D. Nontechnical	0.00	1.50	1.50
TOTAL HOURS	2.25	1.50	3.75

II. DEPTH OF READING

ITEM	Number of Items	Interest: Read Carefully	Interest: Skimmed	Source(s): Agency Library	Source(s): Personal Collection	Source(s): Other Sources	TOTAL HOURS
A. Book sections	12	0	12	0	✓	0	0.75
B. Reference books	0	0	0	0	0	0	0.00
C. Journal articles	22	2	20	✓	0	✓	1.00
D. Other publications	31	5	26	✓	✓	✓	1.75
E. Internal publications	10	5	5	0	0	✓	0.25
TOTALS	75	12	63	2	2	3	3.75

(PLEASE CONTINUE ON REVERSE SIDE)

III. READING MICROFORM

TYPE	TOTAL HOURS
A. Microfiche	1.00
B. All other microforms	0.00
TOTAL HOURS	1.00

IV. WHERE YOU READ "AT WORK"

READING PLACE	TOTAL HOURS
A. Office	1.75
B. Laboratory	0.00
C. Department Reading Room	0.00
D. Agency Library	0.50
E. Another Location	0.00
TOTAL HOURS	2.25

V. AGENCY LIBRARY USE

ACTIVITY	Time Spent By: You	Time Spent By: Someone You Asked	TOTAL HOURS
A. Browsing	0.50	0.00	0.50
B. Searching	0.00	0.00	0.00
C. Writing	0.00	0.00	0.00
D. Borrowing Documents	0.00	0.00	0.00
E. Other	0.00	0.00	0.00
TOTAL HOURS	0.50	0.00	0.50

APPENDIX E

DAILY RECORD SHEET

DAILY RECORD SHEET

Date _____ Profile Number _____

NOTE: Enter "0" in any space that does not apply

I. TYPE AND LOCATION OF READING

TYPE	LOCATION "At Work"	LOCATION "Not at Work"	TOTAL HOURS
A. Work-related	____	____	____
B. Field-related	____	____	____
C. Other-technical	____	____	____
D. Nontechnical	____	____	____
TOTAL HOURS	____	____	____

II. DEPTH OF READING

ITEM	Number of Items	Interest: Read Carefully	Interest: Skimmed	Source(s): Agency Library	Source(s): Personal Collection	Source(s): Other Sources	TOTAL HOURS
A. Book sections	____	____	____	____	____	____	____
B. Reference books	____	____	____	____	____	____	____
C. Journal articles	____	____	____	____	____	____	____
D. Other publications	____	____	____	____	____	____	____
E. Internal publications	____	____	____	____	____	____	____
TOTALS	____	____	____	____	____	____	____

(PLEASE CONTINUE ON REVERSE SIDE)

III. READING MICROFORM

TYPE	TOTAL HOURS
A. Microfiche	
B. All other microforms	
TOTAL HOURS	

IV. WHERE YOU READ "AT WORK"

READING PLACE	TOTAL HOURS
A. Office	
B. Laboratory	
C. Department Reading Room	
D. Agency Library	
E. Another Location	
TOTAL HOURS	

V. AGENCY LIBRARY USE

ACTIVITY	Time Spent By: You	Time Spent By: Someone You Asked	TOTAL HOURS
A. Browsing			
B. Searching			
C. Writing			
D. Borrowing Documents			
E. Other			
TOTAL HOURS			